

**Myths And Facts Regarding  
Radiation Protection And Safety:  
Imperfections In Protection From  
Leaded Glasses, Caps, Gloves And  
Light Weight Leaded Gowns**

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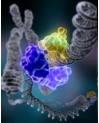


Conflict of Interest

- **Advisory Board**
  - Boston Scientific
  - Coramed
- **Stock Shareholder**
  - Analytics 4 Life
  - Arrayus Medical
  - Calgary Scientific
  - Cohesic
  - Ikomed Medical
  - Innovere Medical
  - Zymeworks



Myth # 1 About Radiation

- Staying within published exposure guidelines represents absolute safety
- There is NO safe dose
- You have varying levels of repair genes
  - Tests for repair genes rare and expensive
- Your radiation physicist probably does not know this


Traditional Dose Exposure Guidelines

- All premised on assumption everyone of a specific age is equally sensitive to radiation injury

Myth # 2. All radiation protection performs as advertised when used in the real world

Lead Glasses



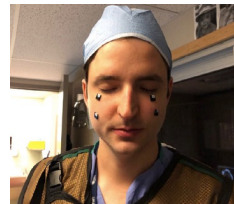
- Radiation attenuation varies 35 - 95 %
- Glasses of same lead equivalence

Radiat Prot Dosim. 2009;133:227-33

“Real World” Measurements VGH



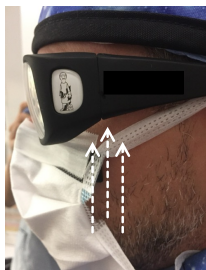
Impact Of Lead Glasses



- Reduction of radiation dose
- Left Eye - 9.5%
- Right Eye - 14.2%

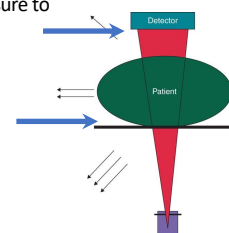
Leaded glasses

- Orientation of face to the radiation source is critical



Fact 1. Scatter Radiation

- Main source of exposure to operator and staff
- Emitted at multiple angulations



Triple layer non lead skirts  
RadPro Inc

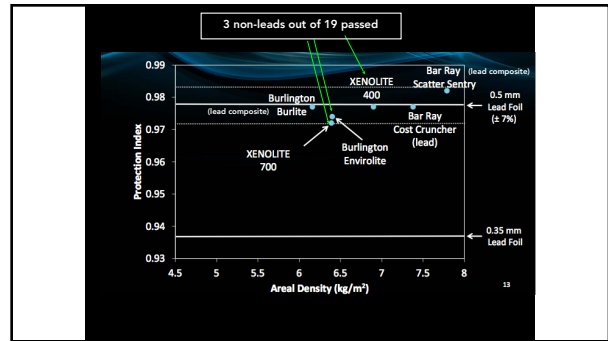


Myth 3. Lightweight Garments Aren't A Compromise In Radiation Protection

### Lightweight Protective Garments: Light On Protection?

Beth Schueler, Ken Fetterly, Jeff Brunette, Gordon Tannahill, Dayne Magnuson, Glenn Sturchio  
Mayo Clinic Rochester and Mayo Clinic Jacksonville

AAPM Annual Meeting 2017 SU-F-702-1



Fact 2. Scatter Radiation

- Multiple angles
- Multiple kV's

% Transmission

Beam	0.25mm	0.35mm	0.5mm
50 kV	0.7%	0.2%	0.03%
60 kV	2.0%	0.8%	0.3%
70 kV	3.7%	1.7%	0.6%
90 kV	8.6%	5.1%	2.6%
110 kV	12.4%	7.8%	4.2%
150 kV	18.7%	12.2%	6.9%

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Lead Alternatives

- Triple layer
  - Tungsten
  - Antimony
  - Bismuth

Cardiovas Intervent Radiol. 2023 Jul;46(7):943-952

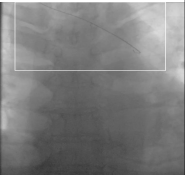


### Radiation Reduction at the Source



**Radiation Reduction**  
OMEGA Medical - Soteria.AI - image guided Region of Interest (ROI).

Reduce radiation exposure by up to 84%.



### Take Home Points

- Nearly all protective devices tested in optimized, non-real world conditions
- There is NO safe radiation dose
  - You have varying levels of repair genes

